ATTACHMENT 1

**UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA**

CISCO SYSTEMS, INC.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	Case No. 14-CV-05344
	§	
ARISTA NETWORKS, INC.,	§	
	§	
Defendant.	§	
	§	

**REBUTTAL EXPERT REPORT ON FAIR USE OF
JUDITH A. CHEVALIER**

June 17, 2016

HIGHLY CONFIDENTIAL – ATTORNEYS' EYES ONLY

Arista's infringement of Cisco's copyrighted works has not contributed to Arista's commercial success. However, Mr. Seifert has misunderstood the importance to Arista's strategy of being able to offer a CLI very similar to the Cisco CLI and, if anything, has simply demonstrated the uncontroversial proposition that customers also consider other features of network switches in making a purchase decision.

D.   Materials Relied Upon

14.   In undertaking my analyses, I have relied on information from a variety of sources including the Complaint, information produced by the parties in this litigation, deposition testimony, and information from publicly-available sources, among others. These materials are listed in Exhibit 2. I have also had conversations with Cisco's technical expert on copyright issues, Dr. Kevin Almeroth. I am deferring to Dr. Almeroth on technical issues and opinions, and I have relied on my conversations with him and his opening and rebuttal reports[3] for some of the assumptions set forth in this report.

15.   In addition, I and/or people working at my direction have had conversations with the following Cisco employees:

- Tejas R. Vashi, Sr. Director, Product Strategy & Marketing at Cisco Systems;

- Paul Aoun, Director of Operations and Customer Programs PMO at Cisco;

- Frank Palumbo, Senior Vice President of Global Data Center/Virtualization Sales at Cisco;

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[3] Opening Expert Report of Kevin Almeroth, June 3, 2016 ("Almeroth Report"); Rebuttal Expert Report of Kevin Almeroth, June 17, 2016 ("Almeroth Rebuttal Report").

- Carl Moberg, Technology Director at Cisco; and

- Johan Bevemyr, Principal Engineer at Cisco.

16.   Should additional information be made available to me, I reserve the right to update my opinions accordingly.

E.   Compensation

17.   I am compensated at the rate of $850 per hour for time I incur on this matter. In addition, I receive compensation based on the professional fees of Analysis Group, Inc., a financial and economic consulting firm, which has provided research support, created exhibits, and assisted in preparation of this report under my direction and supervision. My compensation is not contingent on my findings or on the outcome of this case.

II.   BACKGROUND

A.   Parties

1.   Cisco Systems

18.   Founded in 1984, Cisco "designs and sells broad lines of products, provides services and delivers integrated solutions to develop and connect networks around the world."[4] Cisco categorizes its products and technologies into the following groups: switching, network routing, collaboration, service provider video, data center, wireless, security, and other.[5] In recent years, Cisco has expanded from offering individual products and services to offering integrated architectures and solutions.[6]

19.   Cisco's broad product portfolio spans multiple categories in the networking and

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[4] Cisco Systems, Inc. 2015 Annual Report, at p. 1.
[5] Cisco Systems, Inc. 2015 Annual Report, at p. 1.
[6] Cisco Systems, Inc. 2015 Annual Report, at p. 1.

communications equipment markets, and Cisco has historically been a leading vendor of switches and routers.[7] Customers of Cisco networking products include enterprise businesses of all sizes, communications service providers, and public sector entities.[8] Cisco's routing and switching products run versions of its proprietary IOS (and NX-OS) operating system software, which it describes as "the world's leading network infrastructure software."[9]

2.   Arista Networks

20.   Founded in 2004[10] by former Cisco employees,[11] Arista describes itself as a "supplier of cloud networking solutions that use software innovations to address the needs of large-scale Internet companies, cloud service providers and next-generation data centers for enterprises."[12] Specifically, Arista offers a portfolio of high-speed (*i.e.*, 10 Gigabit Ethernet and higher) Ethernet switches designed for cloud data centers.[13] Recently, Arista has introduced a network router product called 7500R.[14] Arista generates revenue primarily from sales of its switching and routing products, and otherwise derives a small portion of its revenue from sales of customer support contracts and switch accessories.[15]

21.   In 2008, Arista launched its first high-speed Ethernet switch and accompanying

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[7] Cisco Systems, Inc. 2015 Annual Report, at p. 12.

[8] Cisco Systems, Inc. 2015 Annual Report, at p. 9.

[9] http://www.cisco.com/c/en/us/products/ios-nx-os-software/ios-technologies/index.html (viewed 5/6/2016).

[10] https://www.arista.com/en/company/company-overview (viewed 4/22/2016). Arista was originally incorporated under the name Arastra, Inc. in October 2004. In October 2008, the company changed its name to Arista Networks, Inc. *See* Arista Networks, Inc. 2014 Annual Report, at p. 86. I use "Arista" to refer to both Arista and Arastra throughout this report.

[11] Two of Arista's founders had previously worked at Cisco. Jefferies, "Arista Networks: Big Expectations & Valuation, Big Risks; Initiating Coverage at Underperform," December 1, 2014, at p. 21.

[12] Arista Networks, Inc. 2014 Annual Report, at p. 4.

[13] https://www.arista.com/en/products/switches (viewed 5/3/2016). *See also*, Arista Networks, Inc. 2014 Annual Report, at pp. 7-8.

[14] https://www.arista.com/en/company/news/press-release/1283-pr-20160329 (viewed 6/17/2016).

[15] Arista Networks, Inc. 2014 Annual Report, at pp. 61, 91.

proprietary operating system software, marketed as Extensible Operating System ("EOS").[16] Since then, Arista has grown rapidly and now describes itself as one of the top three vendors in the high-speed data center switching market.[17] Primarily serving customers operating public or private clouds, Arista's customers include large Internet companies, service providers, financial services organizations, and private enterprises.[18]

B.   Marketplace Overview

1.   Networking Equipment

22.   I understand that a network consists of two or more computers that are linked to allow for efficient communication and interaction between them.[19] In most local area networks (or "LANs"),[20] data is transferred between computers and other network devices through Ethernet cables.[21] In addition, most networks include other hardware components—such as switches, hubs, routers, repeaters, bridges, gateways, and others—that are responsible for moving data from one network cable to another.[22] Each of these basic network connection devices serves a different purpose in the network.[23]

23.   I understand that switches, also known as "Ethernet switches," are pieces of network equipment that connect multiple devices within a LAN and are capable of directing, or

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[16] https://www.arista.com/en/company/news/press-release/147-pr-20080429-01 (viewed 6/14/2016).

[17] Arista Networks, Inc. 2014 Annual Report, at pp. 7-8.

[18] Arista Networks, Inc. 2014 Annual Report, at p. 5.

[19] Hallberg, Bruce. *Networking: A Beginner's Guide (Sixth Edition)*. McGraw Hill Education, 2014, at pp. 21-25.

[20] Networks that are specific to a certain building or location are typically referred to as local area networks ("LANs"). Hallberg, Bruce. *Networking: A Beginner's Guide (Sixth Edition)*. McGraw Hill Education, 2014, at pp. 24-25.

[21] Hallberg, Bruce. *Networking: A Beginner's Guide (Sixth Edition)*. McGraw Hill Education, 2014, at p. 36. *See also*, https://www.pctechguide.com/networking/ethernet (viewed 4/27/2016).

[22] Hallberg, Bruce. *Networking: A Beginner's Guide (Sixth Edition)*. McGraw Hill Education, 2014, at p. 58.

[23] Hallberg, Bruce. *Networking: A Beginner's Guide (Sixth Edition)*. McGraw Hill Education, 2014, at p. 58.

"switching," traffic between two or more network segments.[24]

2.   Data Center Switches

24.   I have been informed that Ethernet switches are sometimes classified into two broad categories—data center switches and campus switches—that are sometimes further segmented by speed and other characteristics. The campus refers to the "portion of the computing infrastructure that provides access to network communications services and resources to end users and devices spread over a single geographic location."[25] In contrast, a data center is a facility that centralizes an organization's information technology infrastructures and data stores.[26] While switches in a campus environment provide connectivity to end users, data center switches provide network connectivity and services to servers, storage, and other devices designed to process and exchange data.[27]

25.   There are many different types of data center switches available in the marketplace, which differ across a number of dimensions, including, among others, form factor, port density, operating system software, and support for different network speeds.[28] In addition to basic Ethernet connectivity, data center switches often offer other advanced features relating to

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[24] Hallberg, Bruce. *Networking: A Beginner's Guide (Sixth Edition)*. McGraw Hill Education, 2014, at pp. 31, 370.

[25] http://www.cisco.com/c/en/us/td/docs/solutions/Enterprise/Campus/campover.html (viewed 6/17/2016). In a campus, users or employees connect to the network using a mix of wired and wireless devices (such as desktops, laptops, phones, phones, and others). https://www.linkedin.com/pulse/20140416201213-201288603-campus-vs-data-center (viewed 4/27/2016).

[26] http://www.sapdatacenter.com/article/data_center_functionality/ (viewed 4/27/2016). Data centers are typically run by large companies or government agencies, and are increasingly used to provide a cloud solution service for private and business applications.

[27] Gartner – Market Share Enterprise Network Equipment by Market Segment, Worldwide, 4Q14 and 2014.xlsx, at sheet "Definitions;" https://www.linkedin.com/pulse/20140416201213-201288603-campus-vs-data-center (viewed 4/27/2016).

[28] http://blogs.cisco.com/smallbusiness/understanding-the-different-types-of-ethernet-switches (viewed 4/18/2016).

resilience, architectural scalability, and operational manageability.[29]

3.   High-Speed Data Center Switching

26.   I understand that data center switching is the fastest growing segment of the overall Ethernet switch market. According to a February 2016 Arista presentation, the data center switch segment grew from approximately $6 billion to over $8 billion in worldwide revenues from 2010 to 2014.[30] According to Arista, this segment is expected to grow to approximately $13 billion by 2020, with much of this growth driven by the increasing adoption of cloud computing and migration to higher Ethernet speeds.[31]

27.   There are many vendors of data center switches, including Cisco, Arista, Juniper, HP, Dell, Brocade, and others. Cisco competes in all segments of Ethernet switching. According to Soni Jiandani, Cisco's Senior Vice President of Marketing, HP and Juniper also compete broadly across all segments of Ethernet switching, while other vendors typically compete in certain segments and not others.[32]

a.   Cloud Computing

28.   I understand that the recent trend towards cloud computing has contributed to the adoption of high-speed Ethernet switches.[33] Cloud computing generally refers to the hosting of

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[29] http://www.cisco.com/c/en/us/solutions/collateral/data-center-virtualization/data-center-switching/n et_implementation_white_paper0900aecd8053495a.html (viewed 4/28/2016).

[30] Arista Q4 2015 Highlights presentation, February 2016, at p. 4. *See also*, Jefferies, "Arista Networks: Big Expectations & Valuation, Big Risks; Initiating Coverage at Underperform," December 1, 2014, at p. 8.

[31] Arista Q4 2015 Highlights presentation, February 2016, at p. 4. *See also*, Jefferies, "Arista Networks: Big Expectations & Valuation, Big Risks; Initiating Coverage at Underperform," December 1, 2014, at p. 8; http://www.networkworld.com/article/2874156/ethernet-switch/data-center-cloud-sdn-driving-ethernet-switch-market-to-25b.html (viewed 5/9/2016).

[32] Deposition of Soni Jiandani, April 29, 2016 ("Jiandani Deposition"), at pp. 81-87.

[33] The high-speed data center switching segment is sometimes considered to be comprised of switches that support speeds of 10 GbE and higher. *See* Deposition of Jayshree Ullal, February 25, 2016 ("Ullal Deposition"), at pp. 358-359.

platforms and applications in large data centers that enable the flexible delivery of computing software, infrastructure, and storage over the Internet.[34] Cloud data centers are massively scaled data centers that house thousands of servers connected by high-speed network switches.[35] Cloud data centers require high-speed network switches that provide scalability (to allow the cloud network to scale to the overall level of throughput in the cloud data center at any given time), low latency, guaranteed performance, and simpler and more automated management capabilities.[36]

29.   The largest cloud customers include public cloud providers such as Amazon, Microsoft, eBay, Facebook, Google, and Yahoo (also referred to as "cloud titans").[37] In addition, some large enterprises have begun to supplement their traditional data centers with private clouds (*i.e.*, highly virtualized cloud data centers located within the company's firewall) to gain efficiencies of cloud computing in a more controlled environment.[38] According to Arista, to date, the primary adopters of cloud networking include web companies (including "cloud titans"), high tech companies, financial service companies, and service provider/cloud/hosting companies.[39]

30.   As cloud data center workloads continue to increase, cloud providers and other

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[34] Hurwitz, Judith, et al. *Cloud Computing for Dummies*. Hoboken, NJ: John Wiley & Sons, Inc., 2010, at pp. 8-9. *See also*, https://www.arista.com/blogs/?p=53 (viewed 4/29/2016).

[35] https://www.arista.com/blogs/?p=53 (viewed 4/29/2016). In comparison, a traditional data center is typically an on-premise facility that provides the company with full control over its customized, dedicated information technology infrastructure equipment and resources. Arista Networks, Inc. 2014 Annual Report, at p. 6.

[36] https://www.arista.com/blogs/?p=53 (viewed 4/29/2016); Hurwitz, Judith, et al. *Cloud Computing for Dummies*. Hoboken, NJ: John Wiley & Sons, Inc., 2010, at p. 55.

[37] Jefferies, "Arista Networks: Big Expectations & Valuation, Big Risks; Initiating Coverage at Underperform," December 1, 2014, at p. 32. *See also*, Arista Q4 2015 Highlights presentation, February 2016, at p. 7.

[38] Hurwitz, Judith, et al. *Cloud Computing for Dummies*. Hoboken, NJ: John Wiley & Sons, Inc., 2010, at p. 88; https://www.arista.com/blogs/?p=51 (viewed 4/29/2016).

[39] Arista Q4 2015 Highlights presentation, February 2016, at p. 23.

cloud customers have begun to replace aging infrastructure and migrate to higher network speeds to boost capacity.[40] Several major cloud providers, such as Google, Amazon, Microsoft, and Facebook, have begun to migrate to 100 GbE switches.[41] Exhibit 3 illustrates this growth of 40 GbE and 100 GbE switches. According to Arista, 100 GbE switches are expected to account for the majority of data center switch revenues by 2020.[42]

b.   Competition

31.   As with the overall Ethernet switch market, Cisco is a leader in high-speed data center Ethernet switch segment. Cisco's high-speed switching portfolio includes the Nexus product line and the MDS product line.[43]

32.   Starting around the 2012 to 2013 time period, Arista has rapidly expanded its high-speed data center switching sales.[44] While Arista's early generations of switching products primarily appealed to niche customers in high-frequency trading or high power computing,[45] its later products have achieved more widespread appeal as the industry has shifted to higher speeds and adoption of cloud computing has increased. Today, Arista's customer base is largely comprised of vendors in each of the four key verticals adopting cloud networking.[46] An estimated

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[40] Jefferies, "Arista Networks: Big Expectations & Valuation, Big Risks; Initiating Coverage at Underperform," December 1, 2014, at p. 12; http://www.networkworld.com/article/2955029/cisco-subnet/data-center-drives-ethernet-market.html (viewed 5/9/2016).

[41] http://www.networkworld.com/article/2955029/cisco-subnet/data-center-drives-ethernet-market.html (viewed 5/9/2016).

[42] Arista Q4 2015 Highlights presentation, February 2016, at p. 6.

[43] http://www.networkworld.com/article/2282706/lan-wan/cisco-s-nexus-is-big---and-a-big-deal.html (viewed 6/14/2016); http://www.cisco.com/c/en/us/products/switches/data-center-switches/index.html#~tab-products-services (viewed 5/31/2016).

[44] Arista Q4'2015 Highlights, February 2016, at p. 5.

[45] Ullal Deposition, at pp. 159-160.

[46] Arista Q4 2015 Highlights presentation, February 2016, at p. 30. As described above, the four key verticals adopting cloud networking are web companies (including cloud titans), high tech companies, financial services companies, and service provider/cloud/hosting companies. *See also*, Jefferies, "Arista Networks: Big Expectations & Valuation, Big Risks; Initiating Coverage at Underperform," December 1, 2014, at p. 32.

50 percent of Arista's customer base is made up of "cloud titans," including Microsoft, Google, and Facebook, among others.[47] Microsoft, Arista's largest customer, accounted for approximately 10 percent of its revenues in 2014.[48]

33.   Dell'Oro and Crehan are two of the sources of market share data of data center switches. Both sources show that Cisco has lost market share in the high-speed data center switching segment and Arista has gained share in this segment in the last few years. For example, Exhibit 7 shows that, according to Crehan, Arista's share of the worldwide high-speed data center switching segment (10/40/100 GbE) increased from 0.1 percent of revenues and 0.3 percent of ports in Q1 2008 to approximately 11.1 percent of revenues and 13.3 percent of ports in Q4 2015, with most of those gains occurring since 2013.[49] In comparison, Cisco's market share declined from 82.4 percent of revenues and 73.2 percent of ports in Q1 2010 to 60.2 percent of revenues and 55.8 percent of ports in Q4 2015.[50] Arista's share, as tracked by Crehan, is even more substantial among worldwide sales of 40 GbE and 100 GbE switches. By Q4 2015, Arista had grown to account for 18.3 percent of revenues and 21.6 percent of ports of 40 GbE switches, second only to Cisco's 56.1 percent revenue share and 53.1 percent port share.[51] In the 100 GbE switch market, Arista accounted for 29.0 percent of revenues in Q4 2015 (second to Cisco's 36.9 percent share) and 55.7 percent of ports, surpassing Cisco's 23.0 percent port

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[47] Jefferies, "Arista Networks: Big Expectations & Valuation, Big Risks; Initiating Coverage at Underperform," December 1, 2014, at p. 32.

[48] Arista Networks, Inc. 2014 Annual Report, at p. 9.

[49] Exhibit 7. According to Dell'Oro, Arista's share of the high-speed data center switching segment (10/40/100 GbE) increased from 3.5 percent of revenues and 4.5 percent of ports in Q1 2013 to approximately 8.9 percent of revenues and 9.5 percent of ports in Q4 2015. Exhibit 14.

[50] Exhibit 7. According to Dell'Oro, Cisco's market share decreased from 66.9 percent of revenues and 53.0 percent of ports in Q1 2013 to 58.3 percent of revenues and 43.2 percent of ports in Q4 2015. Exhibit 14.

[51] Exhibit 5. According to Dell'Oro, in Q4 2015, Arista accounted for 15.0 percent of revenues and 15.2 percent of ports of 40 GbE switches, as compared to Cisco's 50.8 percent revenue share and 41.1 percent port share. Exhibit 12.

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A. The Role of CLI in Management and Operation of Data Center Networks

63.   As described above, data center networks are complex environments comprised of thousands of devices that must communicate with each other efficiently. According to Arista's Senior Director of Customer Engineering, Mark Berly, "one of the challenges when you start a data center is it's a non-trivial exercise to get all these different devices all working together and operating the way they're supposed to."[131]   Even after the initial installation and configuration, ongoing management and monitoring of network devices is necessary to ensure the continued successful operation of a data center network. Data centers are essential to the operation of many organizations and require continuous reliable network performance. Data center outages can prevent access to critical data, interfere with core business processes, and harm organizational productivity and customer loyalty.[132]

64.   As such, one of the most critical tasks for data center network operators involves continuously managing, monitoring, and troubleshooting networking equipment to ensure that it is operating as intended.[133]   As with the initial configuration, management of the network is complex, nuanced, and labor-intensive.[134] Even despite management efforts, network errors and data center outages occur, and "human error" is a primary cause.[135] With the average impact of a data center outage exceeding $300,000 per hour, the effects of such errors quickly become

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[131] Berly Deposition, at pp. 42-43, 58.

[132] *See, e.g.*, http://www.emersonnetworkpower.com/en-US/Resources/Market/Data-Center/Latest-Thinking/Ponemon/Documents/2016-Cost-of-Data-Center-Outages-FINAL-2.pdf (viewed 5/16/2016).

[133] *See, e.g.*, http://searchnetworking.techtarget.com/tip/How-to-monitor-and-manage-your-data-center-network (viewed 5/15/2016).

[134] In fact, labor costs represent the single largest cost element for most data centers, accounting for as much as 40 percent of overall costs. *See* http://www.gartner.com/newsroom/id/1234513 (viewed 5/16/2016).

[135] According to a study conducted in 2014 by third-party market research firm, ZK Research, "human error" was the primary cause of network downtime in data centers. ARISTANDCA12301997-2003, at 1999. *See also*, CSI-ANI-00047424.000025.

substantial.[136] As described by Credit Suisse, "[i]f a network fails, it impacts the compute and storage IT as well, meaning the need for reliability and taking less risk remains high."[137]

65.   For many customers of Cisco, Cisco CLI is the primary user interface through which network operators configure, manage, and monitor network switches and other network hardware.[138] As described in a Cisco manual, "[w]hen an engineer needs to examine how a switch is working to verify its current status and to troubleshoot any problems, the vast majority of the time is spent using commands from Cisco CLI."[139] There are many different vendors of networking products offering different CLIs. These user interfaces vary across a number of attributes that affect how the user interacts with the switch, including command language, syntax, organization and hierarchy, and output.[140] These aspects constitute the distinctive "look and feel" of each proprietary CLI, which I understand from Dr. Almeroth is the "core" of the experience as "it is the element by which users interact and recognize" the switch platform.[141] I understand that configuring and managing a network switch using Cisco CLI is an iterative process in which command expressions are entered by the user, the switch executes those

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[136] ARISTANDCA12301997-2003, at 1997.

[137] Credit Suisse, "Cisco Systems Inc.," September 18, 2013, at p. 47.

[138] While other interfaces, such as Graphical User Interfaces ("GUIs") or Linux shells (for Arista switches), can be used in certain interactions with the switch, I understand that these interfaces do not provide the same level of control or troubleshooting capabilities as the CLI. According to Mr. Berly, the CLI is a requirement for "day-to-day operation and configuration of the device" because "there are times when you need to interact with the device at a lower level to see what's going on" and, without the CLI, "there's no other good way to do it." Berly Deposition, at pp. 73-80.

[139] Cisco CCENT / CCNA ICND1 100-101 Official Cert Guide, at p. 150 (available at https://cdn2.hubspot.net/hub/280690/file-270025813-pdf/Vidcaster_Demo_Sites/ICND1.pdf).

[140] Almeroth Report, at pp. 13-22. *See also*, Deposition of Lincoln Dale, January 21, 2016 ("Dale Deposition"), at p. 215. For example, Cisco's "IOS Configuration Fundamentals Command Reference" guide provides almost 1,200 pages of information on specific command language and syntax. http://www.cisco.com/c/en/us/td/docs/ios/fundamentals/command/reference/cf_book.pdf (viewed 5/18/2016). *See also*, https://www.juniper.net/techpubs/en_US/junos12.1/information-products/topic-collections/swconfig-cli/swconfig-cli.pdf (viewed 5/18/2016).

[141] Almeroth Rebuttal Report, at p. 77.

command expressions by, among other things, performing an action and/or generating output, and this output is then reviewed and interpreted by the user. I understand that this process is made easier by increased familiarity with a particular CLI.

66.   Network engineers continue to gain experience and familiarity with a particular CLI through their frequent interactions with it on the job.[142] As a result, as described by Arista's Mr. Berly, "one huge contributor to operational cost is going to be really around the familiarity that the operators have with the CLI of the platform."[143]

B.   Cisco Has Invested in its CLI and Educating Customers on that CLI, Thereby Promoting the Effective Use of Cisco's Switches and Other Cisco Products

67.   I understand from Dr. Almeroth that the Cisco CLI is "the product of decades of investment and creative endeavor by Cisco."[144] As of 2004, I understand that Cisco had invested hundreds of millions of dollars over many years in the development of its unique CLI interface.[145]

68.   In addition, Cisco has made substantial investments in educating and training network engineers to, among other things, operate Cisco network equipment using the Cisco CLI. Cisco launched its training program in the early 2000s.[146] According to Mr. Seifert, "there was a real lack of knowledge in how the protocols worked, troubleshooting and problem resolution, and proper installation and configuration. It typically fell to each vendor to provide

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[142] Berly Deposition, at pp. 175-176.
[143] Berly Deposition, at p. 152.
[144] Almeroth Report, at p. 14.
[145] Declaration of Charles Giancarlo in Support of Plaintiff Cisco's Motion For Preliminary Injunction in *Cisco Systems, Inc. v. Huawei Technologies Co., Ltd., et al.*, Case No. 2:03-cv-027 (E.D. Texas), February 3, 2003 ("Giancarlo Declaration"), at p. 4.
[146] Giancarlo Declaration, at p. 4; http://www.bradreese.com/blog/how-the-cisco-ccie-program-was-born.htm (viewed 6/14/2016).

customer training on these issues."[147] Over time, Cisco has devoted substantial resources to managing and improving its training and certification programs by, among other things, updating the material covered by Cisco certification exams in step with advances in networking technology and employers' benchmark requirements.[148] Cisco has continued to train thousands of network engineers each year.[149]

69.   Cisco offers an array of professional certifications at four levels of expertise, ranging from entry to expert.[150] Cisco also offers its certifications in a number of technology specializations, one of which is "Routing and Switching."[151] Cisco maintains a network of Cisco-authorized learning partners.[152] Cisco-authorized learning partners offer optional preparation courses designed for each certification exam that typically involve several days of classroom instruction.[153]

70.   Cisco's CLI is a critical component of these certification exams and training courses.[154] For example, the associate-level Cisco Certified Network Associate ("CCNA")[155]

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[147] Seifert Report, at p. 30.

[148] Conversation with Mr. Vashi. I understand that one of the purposes of Cisco's training and certification programs is to promote the Cisco networking business.

[149] Conversation with Mr. Vashi.

[150] Cisco certifications are offered in the following levels of expertise: entry (Cisco Certified Entry Technician, or "CCENT"), associate (Cisco Certified Network Associate, or "CCNA"), professional (Cisco Certified Network Professional, or "CCNP"), and expert (Cisco Certified Internetwork Expert, or "CCIE").
https://learningnetwork.cisco.com/community/certifications (viewed 5/17/2016).

[151] Technology specializations include Routing and Switching, Cloud, Collaboration, Data Center, Design, Industrial/ Internet of Things, Security, Service Provider, and Wireless.
https://learningnetwork.cisco.com/community/certifications (viewed 5/17/2016).

[152] https://learningnetwork.cisco.com/community/learning_center/expert-level-training/ccie-routing-switching/learning-partners (viewed 6/12/2016).

[153] For example, the recommended preparation course for the associate-level CCNA routing and switching certification exam involves over 60 hours of instruction and costs between $2,000 and $4,000. *See* https://www.globalknowledge.com/us-en/course/87645/ccnax-v20-ccna-routing-and-switching-boot-camp/?utm_source=partner&utm_medium=referral&utm_campaign=ciscoweb-5340 (viewed 5/27/2016).

[154] *See, e.g.*, Deposition of Christine Bakan, June 10, 2016 ("Bakan Deposition"), at p. 44.

[155] An associate-level CCNA certification in routing and switching validates an engineer's ability to install,

my understanding is that both HP and Dell have been in the networking industry since well before 2008.[282] In addition, both companies appear to follow a strategy of selling switches based partly on existing corporate relationships tied to the sale of products such as servers.[283] So, unlike Arista, such companies already had their "foot in the door" at IT departments.

VI.   CONCLUSION

126.   Should additional information be made available to me, I reserve the right to update my opinions accordingly.

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Judith A. Chevalier

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[282] http://www.networkworld.com/article/2211137/lan-wan/cisco-vs--hp-in-the-networking-market.html (viewed 6/17/2016);
https://books.google.com/books?id=2GzAskU561EC&pg=PA11&lpg=PA11&dq=dell+powerconnect+switches+20 02&source=bl&ots=ZJNpg5U0uY&sig=qKqUqYiQc1gI4FkDYv6WOTaiesA&hl=en&sa=X&ved=0ahUKEwi2g4 XhpK7NAhUGPz4KHVLHBjEQ6AEIQTAF#v=onepage&q=dell%20powerconnect%20switches%202002&f=false (viewed 6/17/2016).
[283] According to a 2015 Gartner report, "Dell sells [networking equipment] primarily to customers with Dell servers or PCs…" ARISTANDCA00289274-300 at 285. Similarly, a 2013 Credit Suisse analyst report comments that HP scores highly on its IT Portfolio, which is defined as "storage, servers, etc. integration". Credit Suisse "Cisco Systems," September 18. 2013, at pp. 27-28. Conversation with Mr. Palumbo.